

Because the Preston and Alasaarela references do not even address the problem solved by the present invention as claimed in claims 1 and 6, the Preston and Alasaarela references, alone or in combination, do not suggest the combination upon which the Examiner relies to obviate claims 1 and 6. The present invention as claimed solves the problem of providing an apparatus that will quantitatively evaluate the image quality of ultrasound image scanners . The method and apparatus of the present invention use a quantitative approach to determine the image quality produced by an ultrasound scanner. In order for the references to suggest or teach the solution disclosed by the present invention, the references must, at a minimum, address the problem of quantitatively evaluating image quality of ultrasound scanners. The Preston and Alasaarela references do not address this problem. Preston relates to the evaluation of the acoustic output properties of medical ultrasonic equipment as opposed to the evaluation of image quality of ultrasound scanners. see Preston Abstract lines 2-3. Alasaarela discloses visual manual evaluation of film image using an enlarging machine for providing an estimate of some image quality parameters. see page 27 ("All measurements are made directly from the film, using, for example, an enlarging machine.") Thus, the Preston and Alasaarela references do not suggest a combination which makes obvious the present invention as claimed in claims 1 and 6.

2. Claims 1 and 6 Are Not Made Obvious Because the Examiner's Hypothetical Combination Is Based On Impermissible Hindsight Reasoning

None of the references teaches the unique combination of features and steps called for in claims 1 and 6 respectively. It is impermissible hindsight reasoning for the Examiner to pick a feature here and there from among the references to construct a hypothetical combination which obviates the claims. As stated in In re Gorman, 18 U.S.P.Q.2d 1885, 1888 (Fed. Cir. 1991) (citations omitted):

It is impermissible, however, simply to engage in a hindsight reconstruction of the claimed invention, using the applicant's structure as a template and selecting elements from references to fill the gaps. The references themselves must provide some teaching whereby the applicant's combination would have been obvious.

In forming a hypothetical combination, the Examiner reasons that Preston does not disclose a phantom object. The Examiner then suggests that Alasaarela discloses phantom specimens for the evaluation of the properties of ultrasound diagnostic scanner. The Examiner states that by including the phantom specimen from Alasaarela into the apparatus in Preston, claims 1 and 6 are obviated. One of the reasons that the apparatus of Preston does not suggest the inclusion of a phantom specimen as disclosed in Alasaarela is that Preston deals with the evaluation of acoustic output not image quality.

Preston discloses a self contained measurement system for measuring acoustic output. In this system, Preston "maintains the concept of a hydrophone" [which is an instrument for listening to sound transmitted through water]. Preston at p. 122. Preston only measures acoustic output, which has nothing to do with

evaluating image quality. Preston never discusses image quality. Thus, because Preston's system does not measure image quality, it is meaningless to try and combine a phantom specimen to Preston for evaluation of image quality.

Because no cited reference suggests the combination proposed by the Examiner, the Examiner may not make claims 1 and 6 obvious by constructing a hypothetical combination based on hindsight reasoning. For these reasons, claims 1 and 6 is not made obvious by Preston, alone or in view of Alasaarela.

3. The Suggested Combination Does Not Disclose the Invention as Claimed

Finally, even if Preston could properly be combined with Alasaarela, these references, alone or in combination, do not disclose the present invention as claimed in claims 1 and 6, because claim 1 requires software means to "quantitatively determine image quality characteristics of said scanner" and claim 6 requires the step of "quantitative processing of said image to evaluate image quality characteristics of the scanner".

The Examiner has cited Preston as showing "software means". Contrary to the Examiner's understanding, however, Preston's system is a dedicated system for measurement of acoustic output. Consequently, the software in Preston is probably designed for that purpose. Moreover, Alasaarela only discloses a manual visual evaluation of image quality. Thus, neither Preston nor Alasaarela, alone or in combination, discloses the claimed requirement of quantitatively determining image quality characteristics. Consequently, claims 1 and 6 are not made obvious by Preston, alone or in view of Alasaarela.

Claims 2-3 and 7-20 Are Not Made Obvious By Preston, Alone or in View of Alasaarela

Because claims 2-5, which depend from claim 1, incorporate all the limitations of claim 1 as well as additional limitations, the above arguments apply a fortiori to these grounds for rejection. Because claims 7-20, which depend from claim 6, incorporate all of the limitations of claim 6 as well as additional limitations, the above arguments apply a fortiori to these grounds for rejection. Thus, claims 2-5 and 7-20 are patentable over Preston, alone or in view of Alasaarela.

CONCLUSION

Applicant has pointed out that the claims are patentable over Preston, alone, or in view of Alasaarela. Consequently, the claims 1-20 appear to be allowable and a Notice of Allowance is requested.

Respectfully submitted,

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